

CLAIMS:

1. A multi channel audio encoder comprising:
means (101) for receiving an input multi channel signal;
a parametric multi channel encoder (115) for generating a single channel signal and multi channel parameters for at least a first part of the input multi channel signal;
5 the multi channel parameters comprising multi channel information related to the single channel signal;
a multi channel intensity encoder (117) for generating multi channel intensity data in response to the input multi channel signal and the single channel signal; and
means (113) for generating encoded audio output data comprising the single channel signal, the intensity data and the multi channel parameters.
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2. A multi channel audio encoder as claimed in claim 1 wherein the multi channel parameters comprise Inter-channel Intensity Difference (IID) parameters.
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3. A multi channel audio encoder as claimed in claim 2 wherein the Inter-channel Intensity Difference (IID) parameters are difference parameters relative to the intensity data.
4. A multi channel audio encoder as claimed in claim 1 wherein the multi channel parameters comprise Inter-channel Time Difference (ITD) parameters.
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5. A multi channel audio encoder as claimed in claim 1 wherein the multi channel parameters comprise Inter-channel Cross-Correlations (ICC) parameters.
6. A multi channel audio encoder as claimed in claim 1 wherein the intensity data comprises individual scale factors for multiple channels.
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7. A multi channel audio encoder as claimed in claim 6 wherein the multi channel parameters comprise scale factor difference values relative to the individual scale factors of the intensity data.

8. A multi channel audio encoder as claimed in claim 1 further comprising means (105, 107) for dividing the input multi channel signal into the first part and a second part; and
- 5 means (109, 111) for encoding the second part as a plurality of individually encoded single channel signals;
and wherein the means (113) for generating is operable to include the individually encoded single channel signals in the encoded audio output data.
- 10 9. A multi channel audio encoder as claimed in claim 8 wherein the second part corresponds to a low frequency band of the input signal and the first part corresponds to a high frequency band of the input signal.
- 15 10. A multi channel audio encoder as claimed in claim 1 wherein the multi channel audio encoder is a stereo audio encoder.
11. A multi channel audio encoder as claimed in claim 1 further comprising means for transmitting the encoded audio output data as a single data stream.
- 20 12. A method of encoding an audio signal comprising the steps of:
receiving an input multi channel signal;
generating a single channel signal and multi channel parameters for at least a first part of the input multi channel signal by parametric multi channel encoding; the multi channel parameters comprising multi channel information related to the single channel signal;
- 25 generating multi channel intensity data in response to the input multi channel signal and the single channel signal; and
generating encoded audio output data comprising the single channel signal, the intensity data and the multi channel parameters.
- 30 13. A multi channel audio decoder comprising:
means for receiving (201) a single channel signal, parametrically encoded multi channel parameters comprising multi channel information related to the single channel signal and intensity encoded multi channel intensity data related to the single channel signal;

an intensity decoder (203) for generating a first decoded signal from the single channel signal and the intensity data; and

a parametric multi channel decoder (207) operable to generate a decoded multi channel output signal from the first decoded signal and the parametrically encoded multi channel parameters.

14. A multi channel audio decoder as claimed in claim 13 wherein the first decoded signal is a multi channel signal and the intensity decoder (203) is operable to modify the intensity data in response to intensity information of the parametrically encoded multi channel parameters.

15. A multi channel audio decoder comprising:
means for receiving (301) a single channel signal, parametrically encoded multi channel parameters comprising multi channel information related to the single channel signal and intensity encoded multi channel intensity data related to the single channel signal;
an intensity decoder (303) for generating a first decoded signal from the single channel signal; and
a parametric multi channel decoder (309) operable to generate a decoded multi channel output signal from the first decoded signal, the intensity data and the parametrically encoded multi channel parameters.

16. A multi channel audio decoder as claimed in claim 15 wherein the first decoded signal is a mono signal and the parametric multi channel decoder (309) is operable to modify intensity information of the parametrically encoded multi channel parameters in response to the intensity data.

17. A method of multi channel audio decoding comprising the steps of:
receiving a single channel signal, parametrically encoded multi channel parameters comprising multi channel information related to the single channel signal and intensity encoded multi channel intensity data related to the single channel signal;
generating a first decoded signal from the single channel signal and the intensity data by intensity decoding; and

generating a decoded multi channel output signal from the first decoded signal and the parametrically encoded multi channel parameters by parametric multi channel decoding.

5 18. A computer program enabling the carrying out of a method according to claim 12 or of a method according to claim 17.

19. A record carrier comprising a computer program as claimed in claim 18.

10 20. A multi channel audio distribution system comprising a multi channel audio encoder in accordance with claim 1 and a multi channel audio decoder in accordance with claim 13 or claim 15.

21. A multi channel audio signal comprising:

15 single channel signal data,

intensity encoded multi channel intensity data related to the single channel signal, the multi channel intensity data being encoded in accordance with a first encoding protocol; and

20 parametrically encoded multi channel parameters comprising multi channel information related to the single channel signal, the parametrically encoded multi channel parameters being encoded in accordance with a second encoding protocol different than the first encoding protocol.

22. A multi channel audio signal as claimed in claim 21 wherein the single 25 channel data is encoded in accordance with the first encoding protocol.